

SEQUENCE LISTING

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<120> METHODS AND COMPOSITIONS FOR GENERATING ANGIOSTATIN

<130> 4228-1-1-1

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<151> 1997-09-17

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<170> PatentIn Ver. 2.1

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<212> PRT
<213> Homo sapiens

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Cys Tyr Thr Thr Asn Pro Arg Lys

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Val Thr Lys Lys Gln Leu Gly Ala Gly Ser Ile Glu Glu Cys Ala Ala

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30

Lys Cys Glu Glu Asp Glu Glu Phe Thr Cys Arg Ala Phe Gln Tyr His

35

40

45

Ser Lys Glu Gln Gln Cys Val Ile Met Ala Glu Asn Arg Lys Ser Ser

50

55

60

Ile Ile Ile Arg Met Arg Asp Val Val Leu Phe Glu Lys Lys Val Tyr

65

70

75

80

Leu Ser Glu Cys Lys Thr Gly Asn Gly Lys Asn Tyr Arg Gly Thr Met
85 90 95

Ser Lys Thr Lys Asn Gly Ile Thr Cys Gln Lys Trp Ser Ser Thr Ser
100 105 110

Pro His Arg Pro Arg Phe Ser Pro Ala Thr His Pro Ser Glu Gly Leu
115 120 125

Glu Glu Asn Tyr Cys Arg Asn Pro Asp Asn Asp Pro Gln Gly Pro Trp
130 135 140

Cys Tyr Thr Thr Asp Pro Glu Lys Arg Tyr Asp Tyr Cys Asp Ile Leu
145 150 155 160

Glu Cys Glu Glu Cys Met His Cys Ser Gly Glu Asn Tyr Asp Gly
165 170 175

Lys Ile Ser Lys Thr Met Ser Gly Leu Glu Cys Gln Ala Trp Asp Ser
180 185 190

Gln Ser Pro His Ala His Gly Tyr Ile Pro Ser Lys Phe Pro Asn Lys
195 200 205

Asn Leu Lys Lys Asn Tyr Cys Arg Asn Pro Asp Arg Glu Leu Arg Pro
210 215 220

Trp Cys Phe Thr Thr Asp Pro Asn Lys Arg Trp Glu Leu Cys Asp Ile
225 230 235 240

Pro Arg Cys Thr Thr Pro Pro Pro Ser Ser Gly Pro Thr Tyr Gln Cys
245 250 255

Leu Lys Gly Thr Gly Glu Asn Tyr Arg Gly Asn Val Ala Val Thr Val
260 265 270

Ser Gly His Thr Cys Gln His Trp Ser Ala Gln Thr Pro His Thr His
275 280 285

Asn Arg Thr Pro Glu Asn Phe Pro Cys Lys Asn Leu Asp Glu Asn Tyr
290 295 300

Cys Arg Asn Pro Asp Gly Lys Arg Ala Pro Trp Cys His Thr Thr Asn
305 310 315 320

Ser Gln Val Arg Trp Glu Tyr Cys Lys Ile Pro Ser Cys Asp Ser Ser
325 330 335

Pro Val Ser Thr Glu Gln Leu Ala Pro Thr Ala Pro Pro Glu Leu Thr
340 345 350

Pro Val Val Gln Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr Arg Gly
355 360 365

Thr Ser Ser Thr Thr Thr Gly Lys Lys Cys Gln Ser Trp Ser Ser
370 375 380

Met Thr Pro His Arg His Gln Lys Thr Pro Glu Asn Tyr Pro Asn Ala
385 390 395 400

Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp Ala Asp Lys Gly Pro
405 410 415

Trp Cys Phe Thr Thr Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu
420 425 430

Lys Lys Cys Ser Gly Thr Glu Ala Ser Val Val Ala Pro Pro Pro Val
435 440 445

Val Leu Leu Pro Asp Val Glu Thr Pro Ser Glu Glu Asp Cys Met Phe
450 455 460

Gly Asn Gly Lys Gly Tyr Arg Gly Lys Arg Ala Thr Thr Val Thr Gly
465 470 475 480

Thr Pro Cys Gln Asp Trp Ala Ala Gln Glu Pro His Arg His Ser Ile
485 490 495

Phe Thr Pro Glu Thr Asn Pro Arg Ala Gly Leu Glu Lys Asn Tyr Cys
500 505 510

Arg Asn Pro Asp Gly Asp Val Gly Gly Pro Trp Cys Tyr Thr Thr Asn
515 520 525

Pro Arg Lys Leu Tyr Asp Tyr Cys Asp Val Pro Gln Cys Ala Ala Pro
530 535 540

Ser Phe Asp Cys Gly Lys Pro Gln Val Glu Pro Lys Lys Cys Pro Gly
545 550 555 560

Arg Val Val Gly Gly Cys Val Ala His Pro His Ser Trp Pro Trp Gln
565 570 575

Val Ser Leu Arg Thr Arg Phe Gly Met His Phe Cys Gly Gly Thr Leu
580 585 590

Ile Ser Pro Glu Trp Val Leu Thr Ala Ala His Cys Leu Glu Lys Ser
595 600 605

Pro Arg Pro Ser Ser Tyr Lys Val Ile Leu Gly Ala His Gln Glu Val
610 615 620

Asn Leu Glu Pro His Val Gln Glu Ile Glu Val Ser Arg Leu Phe Leu
625 630 635 640

Glu Pro Thr Arg Lys Asp Ile Ala Leu Leu Lys Leu Ser Ser Pro Ala
645 650 655

Val Ile Thr Asp Lys Val Ile Pro Ala Cys Leu Pro Ser Pro Asn Tyr
660 665 670

Val Val Ala Asp Arg Thr Glu Cys Phe Ile Thr Gly Trp Gly Glu Thr
675 680 685

Gln Gly Thr Phe Gly Ala Gly Leu Leu Lys Glu Ala Gln Leu Pro Val
690 695 700

Ile Glu Asn Lys Val Cys Asn Arg Tyr Glu Phe Leu Asn Gly Arg Val
705 710 715 720

Gln Ser Thr Glu Leu Cys Ala Gly His Leu Ala Gly Gly Thr Asp Ser
725 730 735

Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Phe Glu Lys Asp Lys
740 745 750

Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu Gly Cys Ala Arg Pro
755 760 765

Asn Lys Pro Gly Val Tyr Val Arg Val Ser Arg Phe Val Thr Trp Ile
770 775 780

Glu Gly Val Met Arg Asn Asn
785 790

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<211> 812
<212> PRT
<213> Bos taurus

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1

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Val Asn Thr Gln Gly Ala Ser Leu Leu Ser Leu Ser Arg Lys Asn Leu
35 40 45

Ala Gly Arg Ser Val Glu Asp Cys Ala Ala Lys Cys Glu Glu Glu Thr
50 55 60

Asp Phe Val Cys Arg Ala Phe Gln Tyr His Ser Lys Glu Gln Gln Cys
65 70 75 80

Val Val Met Ala Glu Asn Ser Lys Asn Thr Pro Val Phe Arg Met Arg
85 90 95

Asp Val Ile Leu Tyr Glu Lys Arg Ile Tyr Leu Leu Glu Cys Lys Thr
100 105 110

Gly Asn Gly Gln Thr Tyr Arg Gly Thr Thr Ala Glu Thr Lys Ser Gly
115 120 125

Val Thr Cys Gln Lys Trp Ser Ala Thr Ser Pro His Val Pro Lys Phe
130 135 140

Ser Pro Glu Lys Phe Pro Leu Ala Gly Leu Glu Glu Asn Tyr Cys Arg
145 150 155 160

Asn Pro Asp Asn Asp Glu Asn Gly Pro Trp Cys Tyr Thr Thr Asp Pro
165 170 175

Asp Lys Arg Tyr Asp Tyr Cys Asp Ile Pro Glu Cys Glu Asp Lys Cys
180 185 190

Met His Cys Ser Gly Glu Asn Tyr Glu Gly Lys Ile Ala Lys Thr Met
195 200 205

Ser Gly Arg Asp Cys Gln Ala Trp Asp Ser Gln Ser Pro His Ala His
210 215 220

Gly Tyr Ile Pro Ser Lys Phe Pro Asn Lys Asn Leu Lys Met Asn Tyr
225 230 235 240

Cys Arg Asn Pro Asp Gly Glu Pro Arg Pro Trp Cys Phe Thr Thr Asp
245 250 255

Pro Gln Lys Arg Trp Glu Phe Cys Asp Ile Pro Arg Cys Thr Thr Pro

260	265	270
Pro Pro Ser Ser Gly Pro Lys Tyr Gln Cys Leu Lys Gly Thr Gly Lys		
275	280	285
Asn Tyr Gly Gly Thr Val Ala Val Thr Glu Ser Gly His Thr Cys Gln		
290	295	300
Arg Trp Ser Glu Gln Thr Pro His Lys His Asn Arg Thr Pro Glu Asn		
305	310	315
320		
Phe Pro Cys Lys Asn Leu Glu Glu Asn Tyr Cys Arg Asn Pro Asn Gly		
325	330	335
Glu Lys Ala Pro Trp Cys Tyr Thr Asn Ser Glu Val Arg Trp Glu		
340	345	350
Tyr Cys Thr Ile Pro Ser Cys Glu Ser Ser Pro Leu Ser Thr Glu Arg		
355	360	365
Met Asp Val Pro Val Pro Pro Glu Gln Thr Pro Val Pro Gln Asp Cys		
370	375	380
Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Ser Ser Thr Thr Ile		
385	390	395
400		
Thr Gly Arg Lys Cys Gln Ser Trp Ser Ser Met Thr Pro His Arg His		
405	410	415
Leu Lys Thr Pro Glu Asn Tyr Pro Asn Ala Gly Leu Thr Met Asn Tyr		
420	425	430
Cys Arg Asn Pro Asp Ala Asp Lys Ser Pro Trp Cys Tyr Thr Thr Asp		
435	440	445
Pro Arg Val Arg Trp Glu Phe Cys Asn Leu Lys Lys Cys Ser Glu Thr		
450	455	460
Pro Glu Gln Val Pro Ala Ala Pro Gln Ala Pro Gly Val Glu Asn Pro		
465	470	475
480		
Pro Glu Ala Asp Cys Met Ile Gly Thr Gly Lys Ser Tyr Arg Gly Lys		
485	490	495
Lys Ala Thr Thr Val Ala Gly Val Pro Cys Gln Glu Trp Ala Ala Gln		
500	505	510
Glu Pro His Gln His Ser Ile Phe Thr Pro Glu Thr Asn Pro Gln Ser		

)

515	520	525
Gly Leu Glu Arg Asn Tyr Cys Arg Asn Pro Asp Gly Asp Val Asn Gly		
530	535	540
Pro Trp Cys Tyr Thr Met Asn Pro Arg Lys Pro Phe Asp Tyr Cys Asp		
545	550	555
560		
Val Pro Gln Cys Glu Ser Ser Phe Asp Cys Gly Lys Pro Lys Val Glu		
565	570	575
Pro Lys Lys Cys Ser Gly Arg Ile Val Gly Gly Cys Val Ser Lys Pro		
580	585	590
His Ser Trp Pro Trp Gln Val Ser Leu Arg Arg Ser Ser Arg His Phe		
595	600	605
Cys Gly Gly Thr Leu Ile Ser Pro Lys Trp Val Leu Thr Ala Ala His		
610	615	620
Cys Leu Asp Asn Ile Leu Ala Leu Ser Phe Tyr Lys Val Ile Leu Gly		
625	630	635
640		
Ala His Asn Glu Lys Val Arg Glu Gln Ser Val Gln Glu Ile Pro Val		
645	650	655
Ser Arg Leu Phe Arg Glu Pro Ser Gln Ala Asp Ile Ala Leu Leu Lys		
660	665	670
Leu Ser Arg Pro Ala Ile Ile Thr Lys Glu Val Ile Pro Ala Cys Leu		
675	680	685
Pro Pro Pro Asn Tyr Met Val Ala Ala Arg Thr Glu Cys Tyr Ile Thr		
690	695	700
Gly Trp Gly Glu Thr Gln Gly Thr Phe Gly Glu Gly Leu Leu Lys Glu		
705	710	715
720		
Ala His Leu Pro Val Ile Glu Asn Lys Val Cys Asn Arg Asn Glu Tyr		
725	730	735
Leu Asp Gly Arg Val Lys Pro Thr Glu Leu Cys Ala Gly His Leu Ile		
740	745	750
Gly Gly Thr Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys		
755	760	765
Phe Glu Lys Asp Lys Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu		

770

775

780

Gly Cys Ala Arg Pro Asn Lys Pro Gly Val Tyr Val Arg Val Ser Pro
785 790 795 800

Tyr Val Pro Trp Ile Glu Glu Thr Met Arg Arg Asn
805 810

<210> 8

<211> 333

<212> PRT

<213> Canis familiaris

<400> 8

Ala Ser Asp Cys Met Phe Gly Asn Gly Lys Gly Tyr Arg Gly Lys Lys
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Ala Thr Thr Val Met Gly Ile Pro Cys Gln Glu Trp Ala Ala Gln Glu
20 25 30

Pro His Arg His Ser Ile Phe Thr Pro Glu Thr Asn Pro Gln Ala Gly
35 40 45

Leu Glu Lys Asn Tyr Cys Arg Asn Pro Asp Gly Asp Val Asn Gly Pro
50 55 60

Trp Cys Tyr Thr Met Asn Gln Arg Lys Leu Phe Asp Tyr Cys Asp Val
65 70 75 80

Pro Gln Cys Val Ser Thr Ser Phe Asp Cys Gly Lys Pro Gln Val Glu
85 90 95

Pro Lys Lys Cys Pro Gly Arg Val Val Gly Gly Cys Val Ala Asn Pro
100 105 110

His Ser Trp Pro Trp Gln Ile Ser Leu Arg Thr Arg Tyr Gly Lys His
115 120 125

Phe Cys Gly Gly Thr Leu Ile Ser Pro Glu Trp Val Leu Thr Ala Ala
130 135 140

His Cys Leu Glu Arg Ser Ser Arg Pro Ala Ser Tyr Lys Val Ile Leu
145 150 155 160

Gly Ala His Lys Glu Val Asn Leu Glu Ser Asp Val Gln Glu Ile Glu
165 170 175

Val Tyr Lys Leu Phe Leu Glu Pro Thr Arg Ala Asp Ile Ala Leu Leu
180 185 190

Lys Leu Ser Ser Pro Ala Val Ile Thr Ser Lys Val Ile Pro Ala Cys
195 200 205

Leu Pro Pro Pro Asn Tyr Val Val Ala Asp Arg Thr Leu Cys Tyr Ile
210 215 220

Thr Gly Trp Gly Glu Thr Gln Gly Thr Tyr Gly Ala Gly Leu Leu Lys
225 230 235 240

Glu Ala Gln Leu Pro Val Ile Glu Asn Lys Val Cys Asn Arg Tyr Glu
245 250 255

Tyr Leu Asn Gly Arg Val Lys Ser Thr Glu Leu Cys Ala Gly Asn Leu
260 265 270

Ala Gly Gly Thr Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val
275 280 285

Cys Phe Glu Lys Asp Lys Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly
290 295 300

Leu Gly Cys Ala Arg Pro Asn Lys Pro Gly Val Tyr Val Arg Val Ser
305 310 315 320

Arg Phe Val Thr Trp Ile Glu Gly Ile Met Arg Asn Asn
325 330

<210> 9
<211> 809
<212> PRT
<213> Erinaceus europaeus

<400> 9
Met Gln Arg Lys Glu Leu Val Leu Leu Phe Leu Leu Phe Leu Gln Pro
1 5 10 15

Gly His Gly Ile Pro Leu Asp Asp Tyr Val Thr Thr Gln Gly Ala Ser
20 25 30

Leu Cys Ser Ser Thr Lys Lys Gln Leu Ser Val Gly Ser Thr Glu Glu
35 40 45

Cys Ala Val Lys Cys Glu Lys Glu Thr Ser Phe Ile Cys Arg Ser Phe
50 55 60

Gln Tyr His Ser Lys Glu Gln Gln Cys Val Ile Met Ala Glu Asn Ser
65 70 75 80

Lys Ser Thr Pro Val Leu Arg Met Arg Asp Val Ile Leu Phe Glu Lys
85 90 95

Lys Met Tyr Leu Ser Glu Cys Lys Val Gly Asn Gly Lys Tyr Tyr Arg
100 105 110

Gly Thr Val Ser Lys Thr Lys Thr Gly Leu Thr Cys Gln Lys Trp Ser
115 120 125

Ala Glu Thr Pro His Lys Pro Arg Phe Ser Pro Asp Glu Asn Pro Ser
130 135 140

Glu Gly Leu Asp Gln Asn Tyr Cys Arg Asn Pro Asp Asn Asp Pro Lys
145 150 155 160

Gly Pro Trp Cys Tyr Thr Met Asp Pro Glu Val Arg Tyr Glu Tyr Cys
165 170 175

Glu Ile Ile Gln Cys Glu Asp Glu Cys Met His Cys Ser Gly Gln Asn
180 185 190

Tyr Val Gly Lys Ile Ser Arg Thr Met Ser Gly Leu Glu Cys Gln Pro
195 200 205

Trp Asp Ser Gln Ile Pro His Pro His Gly Phe Ile Pro Ser Lys Phe
210 215 220

Pro Ser Lys Asn Leu Lys Met Asn Tyr Cys Arg Asn Pro Asp Gly Glu
225 230 235 240

Pro Arg Pro Trp Cys Phe Thr Met Asp Arg Asn Lys Arg Trp Glu Tyr
245 250 255

Cys Asp Ile Pro Arg Cys Thr Thr Pro Pro Pro Ser Gly Pro Thr
260 265 270

Tyr Gln Cys Leu Met Gly Asn Gly Glu His Tyr Gln Gly Asn Val Ala
275 280 285

Val Thr Val Ser Gly Leu Thr Cys Gln Arg Trp Gly Glu Gln Ser Pro
290 295 300

His Arg His Asp Arg Thr Pro Glu Asn Tyr Pro Cys Lys Asn Leu Asp
305 310 315 320

Glu Asn Tyr Cys Arg Asn Pro Asp Gly Glu Pro Ala Pro Trp Cys Phe
325 330 335

Thr Thr Asn Ser Ser Val Arg Trp Glu Phe Cys Lys Ile Pro Asp Cys
340 345 350

Val Ser Ser Ala Ser Glu Thr Glu His Ser Asp Ala Pro Val Ile Val
355 360 365

Pro Pro Glu Gln Thr Pro Val Val Gln Glu Cys Tyr Gln Gly Asn Gly
370 375 380

Gln Thr Tyr Arg Gly Thr Ser Ser Thr Thr Ile Thr Gly Lys Lys Cys
385 390 395 400

Gln Pro Trp Thr Ser Met Arg Pro His Arg His Ser Lys Thr Pro Glu
405 410 415

Asn Tyr Pro Asp Ala Asp Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp
420 425 430

Gly Asp Lys Gly Pro Trp Cys Tyr Thr Thr Asp Pro Ser Val Arg Trp
435 440 445

Glu Phe Cys Asn Leu Lys Lys Cys Ser Gly Thr Glu Met Ser Ala Thr
450 455 460

Asn Ser Ser Pro Val Gln Val Ser Ser Ala Ser Glu Ser Ser Glu Gln
465 470 475 480

Asp Cys Ile Ile Asp Asn Gly Lys Gly Tyr Arg Gly Thr Lys Ala Thr
485 490 495

Thr Gly Ala Gly Thr Pro Cys Gln Ala Trp Ala Ala Gln Glu Pro His
500 505 510

Arg His Ser Ile Phe Thr Pro Glu Thr Asn Pro Arg Ala Asp Leu Gln
515 520 525

Glu Asn Tyr Cys Arg Asn Pro Asp Gly Asp Ala Asn Gly Pro Trp Cys
530 535 540

Tyr Thr Thr Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Ile Pro His
545 550 555 560

Cys Val Ser Pro Ser Ser Ala Asp Cys Gly Lys Pro Lys Val Glu Pro
565 570 575

Lys Lys Cys Pro Gly Arg Val Gly Gly Cys Val Ala His Pro His Ser
580 585 590

Trp Pro Trp Gln Val Ser Leu Arg Arg Phe Gly Gln His Phe Cys Gly
595 600 605

Gly Thr Leu Ile Ser Pro Glu Trp Val Val Thr Ala Ala His Cys Leu
610 615 620

Glu Lys Phe Ser Asn Pro Ala Ile Tyr Lys Val Val Leu Gly Ala His
625 630 635 640

Gln Glu Thr Arg Leu Glu Arg Asp Val Gln Ile Lys Gly Val Thr Lys
645 650 655

Met Phe Leu Glu Pro Tyr Arg Ala Asp Ile Ala Leu Leu Lys Leu Ser
660 665 670

Ser Pro Ala Ile Ile Thr Asp Lys Asp His Pro Ala Cys Leu Pro Asn
675 680 685

Ser Asn Tyr Met Val Ala Asp Arg Ser Leu Cys Tyr Ile Thr Gly Trp
690 695 700

Gly Glu Thr Lys Gly Thr Tyr Gly Ala Gly Leu Leu Lys Glu Ala Gln
705 710 715 720

Leu Pro Val Ile Glu Lys Val Cys Asn Arg Gln Ser Phe Leu Asn Gly
725 730 735

Arg Val Arg Ser Thr Glu Leu Cys Ala Gly His Leu Ala Gly Val
740 745 750

Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Phe Glu Lys
755 760 765

Asp Arg Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu Gly Cys Ala
770 775 780

Arg Leu Thr Arg Pro Gly Val Tyr Val Arg Val Ser Arg Tyr Val Ser
785 790 795 800

Trp Leu Gln Asp Val Met Arg Asn Asn
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<211> 338

<212> PRT

<213> Equus caballus

<400> 10

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Tyr Gln Gly Lys Lys Ala Thr Thr Val Thr Gly Thr Arg Cys Gln Ala
20 25 30

Trp Ala Ala Gln Glu Pro His Arg His Ser Ile Phe Thr Pro Glu Ala
35 40 45

Asn Pro Trp Ala Asn Leu Glu Lys Asn Tyr Cys Arg Asn Pro Asp Gly
50 55 60

Asp Val Asn Gly Pro Trp Cys Tyr Thr Met Asn Pro Gln Lys Leu Phe
65 70 75 80

Asp Tyr Cys Asp Val Pro Gln Cys Glu Ser Ser Pro Phe Asp Cys Gly
85 90 95

Lys Pro Lys Val Glu Pro Lys Lys Cys Ser Gly Arg Ile Val Gly Gly
100 105 110

Cys Val Ala Ile Ala His Ser Trp Pro Trp Gln Ile Ser Leu Arg Thr
115 120 125

Arg Phe Gly Arg His Phe Cys Gly Gly Thr Leu Ile Ser Pro Glu Trp
130 135 140

Val Leu Thr Ala Ala His Cys Leu Glu Arg Ser Ser Arg Pro Ser Thr
145 150 155 160

Tyr Lys Val Val Leu Gly Thr His His Glu Leu Arg Leu Ala Ala Gly
165 170 175

Ala Gln Gln Ile Asp Val Ser Lys Leu Phe Leu Glu Pro Ser Arg Ala
180 185 190

Asp Ile Ala Leu Leu Lys Leu Ser Ser Pro Ala Ile Ile Thr Gln Asn
195 200 205

Val Ile Pro Ala Cys Leu Pro Pro Ala Asp Tyr Val Val Ala Asn Trp
210 215 220

Ala Glu Cys Phe Val Thr Gly Trp Gly Glu Thr Gln Asp Ser Ser Asn

225 230 235 240

Ala Gly Val Leu Lys Glu Ala Gln Leu Pro Val Ile Glu Asn Lys Val
245 250 255

Cys Asn Arg Tyr Glu Tyr Leu Asn Gly Arg Val Lys Ser Thr Glu Leu
260 265 270

Cys Ala Gly His Leu Val Gly Gly Val Asp Ser Cys Gln Gly Asp Ser
275 280 285

Gly Gly Pro Leu Val Cys Phe Glu Lys Asp Lys Tyr Ile Leu Gln Gly
290 295 300

Val Thr Ser Trp Gly Leu Gly Cys Ala Arg Pro Asn Lys Pro Gly Val
305 310 315 320

Tyr Val Arg Val Ser Ser Phe Ile Asn Trp Ile Glu Arg Ile Met Gln
325 330 335

Ser Asn

<210> 11

<211> 810

<212> PRT

<213> Macaca mulatta

<400> 11

Met Glu His Lys Glu Val Val Leu Leu Leu Leu Phe Leu Lys Ser
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Gly Gln Gly Glu Pro Leu Asp Asp Tyr Val Asn Thr Lys Gly Ala Ser
20 25 30

Leu Phe Ser Ile Thr Lys Lys Gln Leu Gly Ala Gly Ser Ile Glu Glu
35 40 45

Cys Ala Ala Lys Cys Glu Glu Glu Glu Phe Thr Cys Arg Ser Phe
50 55 60

Gln Tyr His Ser Lys Glu Gln Gln Cys Val Ile Met Ala Glu Asn Arg
65 70 75 80

Lys Ser Ser Ile Val Phe Arg Met Arg Asp Val Val Leu Phe Glu Lys
85 90 95

Lys Val Tyr Leu Ser Glu Cys Lys Thr Gly Asn Gly Lys Asn Tyr Arg
100 105 110

Gly Thr Met Ser Lys Thr Arg Thr Gly Ile Thr Cys Gln Lys Trp Ser
115 120 125

Ser Thr Ser Pro His Arg Pro Thr Phe Ser Pro Ala Thr His Pro Ser
130 135 140

Glu Gly Leu Glu Glu Asn Tyr Cys Arg Asn Pro Asp Asn Asp Gly Gln
145 150 155 160

Gly Pro Trp Cys Tyr Thr Asp Pro Glu Glu Arg Phe Asp Tyr Cys
165 170 175

Asp Ile Pro Glu Cys Glu Asp Glu Cys Met His Cys Ser Gly Glu Asn
180 185 190

Tyr Asp Gly Lys Ile Ser Lys Thr Met Ser Gly Leu Glu Cys Gln Ala
195 200 205

Trp Asp Ser Gln Ser Pro His Ala His Gly Tyr Ile Pro Ser Lys Phe
210 215 220

Pro Asn Lys Asn Leu Lys Lys Asn Tyr Cys Arg Asn Pro Asp Gly Glu
225 230 235 240

Pro Arg Pro Trp Cys Phe Thr Thr Asp Pro Asn Lys Arg Trp Glu Leu
245 250 255

Cys Asp Ile Pro Arg Cys Thr Thr Pro Pro Pro Ser Ser Gly Pro Thr
260 265 270

Tyr Gln Cys Leu Lys Gly Thr Gly Glu Asn Tyr Arg Gly Asp Val Ala
275 280 285

Val Thr Val Ser Gly His Thr Cys His Gly Trp Ser Ala Gln Thr Pro
290 295 300

His Thr His Asn Arg Thr Pro Glu Asn Phe Pro Cys Lys Asn Leu Asp
305 310 315 320

Glu Asn Tyr Cys Arg Asn Pro Asp Gly Glu Lys Ala Pro Trp Cys Tyr
325 330 335

Thr Thr Asn Ser Gln Val Arg Trp Glu Tyr Cys Lys Ile Pro Ser Cys
340 345 350

Glu Ser Ser Pro Val Ser Thr Glu Pro Leu Asp Pro Thr Ala Pro Pro
355 360 365

Glu Leu Thr Pro Val Val Gln Glu Cys Tyr His Gly Asp Gly Gln Ser
370 375 380

Tyr Arg Gly Thr Ser Ser Thr Thr Thr Gly Lys Lys Cys Gln Ser
385 390 395 400

Trp Ser Ser Met Thr Pro His Trp His Glu Lys Thr Pro Glu Asn Phe
405 410 415

Pro Asn Ala Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp Ala Asp
420 425 430

Lys Gly Pro Trp Cys Phe Thr Thr Asp Pro Ser Val Arg Trp Glu Tyr
435 440 445

Cys Asn Leu Lys Lys Cys Ser Gly Thr Glu Gly Ser Val Ala Ala Pro
450 455 460

Pro Pro Val Ala Gln Leu Pro Asp Ala Glu Thr Pro Ser Glu Glu Asp
465 470 475 480

Cys Met Phe Gly Asn Gly Lys Gly Tyr Arg Gly Lys Lys Ala Thr Thr
485 490 495

Val Thr Gly Thr Pro Cys Gln Glu Trp Ala Ala Gln Glu Pro His Ser
500 505 510

His Arg Ile Phe Thr Pro Glu Thr Asn Pro Arg Ala Gly Leu Glu Lys
515 520 525

Asn Tyr Cys Arg Asn Pro Asp Gly Asp Val Gly Gly Pro Trp Cys Tyr
530 535 540

Thr Thr Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Val Pro Gln Cys
545 550 555 560

Ala Ala Ser Ser Phe Asp Cys Gly Lys Pro Gln Val Glu Pro Lys Lys
565 570 575

Cys Pro Gly Arg Val Val Gly Gly Cys Val Ala Tyr Pro His Ser Trp
580 585 590

Pro Trp Gln Ile Ser Leu Arg Thr Arg Leu Gly Met His Phe Cys Gly
595 600 605

Gly Thr Leu Ile Ser Pro Glu Trp Val Leu Thr Ala Ala His Cys Leu
610 615 620

Glu Lys Ser Ser Arg Pro Ser Phe Tyr Lys Val Ile Leu Gly Ala His
625 630 635 640

Arg Glu Val His Leu Glu Pro His Val Gln Glu Ile Glu Val Ser Lys
645 650 655

Met Phe Ser Glu Pro Ala Arg Ala Asp Ile Ala Leu Leu Lys Leu Ser
660 665 670

Ser Pro Ala Ile Ile Thr Asp Lys Val Ile Pro Ala Cys Leu Pro Ser
675 680 685

Pro Asn Tyr Val Val Ala Asp Arg Thr Glu Cys Phe Ile Thr Gly Trp
690 695 700

Gly Glu Thr Gln Gly Thr Tyr Gly Ala Gly Leu Leu Lys Glu Ala Arg
705 710 715 720

Leu Pro Val Ile Glu Asn Lys Val Cys Asn Arg Tyr Glu Phe Leu Asn
725 730 735

Gly Thr Val Lys Thr Thr Glu Leu Cys Ala Gly His Leu Ala Gly Gly
740 745 750

Thr Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Phe Glu
755 760 765

Lys Asp Lys Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu Gly Cys
770 775 780

Ala Arg Pro Asn Lys Pro Gly Val Tyr Val Arg Val Ser Arg Phe Val
785 790 795 800

Thr Trp Ile Glu Gly Val Met Arg Asn Asn
805 810

<210> 12
<211> 812
<212> PRT
<213> Mus musculus

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Gly Gln Gly Asp Ser Leu Asp Gly Tyr Ile Ser Thr Gln Gly Ala Ser
20 25 30

Leu Phe Ser Leu Thr Lys Lys Gln Leu Ala Ala Gly Gly Val Ser Asp
35 40 45

Cys Leu Ala Lys Cys Glu Gly Glu Thr Asp Phe Val Cys Arg Ser Phe
50 55 60

Gln Tyr His Ser Lys Glu Gln Gln Cys Val Ile Met Ala Glu Asn Ser
65 70 75 80

Lys Thr Ser Ser Ile Ile Arg Met Arg Asp Val Ile Leu Phe Glu Lys
85 90 95

Arg Val Tyr Leu Ser Glu Cys Lys Thr Gly Ile Gly Asn Gly Tyr Arg
100 105 110

Gly Thr Met Ser Arg Thr Lys Ser Gly Val Ala Cys Gln Lys Trp Gly
115 120 125

Ala Thr Phe Pro His Val Pro Asn Tyr Ser Pro Ser Thr His Pro Asn
130 135 140

Glu Gly Leu Glu Glu Asn Tyr Cys Arg Asn Pro Asp Asn Asp Glu Gln
145 150 155 160

Gly Pro Trp Cys Tyr Thr Asp Pro Asp Lys Arg Tyr Asp Tyr Cys
165 170 175

Asn Ile Pro Glu Cys Glu Glu Cys Met Tyr Cys Ser Gly Glu Lys
180 185 190

Tyr Glu Gly Lys Ile Ser Lys Thr Met Ser Gly Leu Asp Cys Gln Ala
195 200 205

Trp Asp Ser Gln Ser Pro His Ala His Gly Tyr Ile Pro Ala Lys Phe
210 215 220

Pro Ser Lys Asn Leu Lys Met Asn Tyr Cys His Asn Pro Asp Gly Glu
225 230 235 240

Pro Arg Pro Trp Cys Phe Thr Thr Asp Pro Thr Lys Arg Trp Glu Tyr
245 250 255

Cys Asp Ile Pro Arg Cys Thr Thr Pro Pro Pro Pro Pro Ser Pro Thr
260 265 270

Tyr Gln Cys Leu Lys Gly Arg Gly Glu Asn Tyr Arg Gly Thr Val Ser
275 280 285

Val Thr Val Ser Gly Lys Thr Cys Gln Arg Trp Ser Glu Gln Thr Pro
290 295 300

His Arg His Asn Arg Thr Pro Glu Asn Phe Pro Cys Lys Asn Leu Glu
305 310 315 320

Glu Asn Tyr Cys Arg Asn Pro Asp Gly Glu Thr Ala Pro Trp Cys Tyr
325 330 335

Thr Thr Asp Ser Gln Leu Arg Trp Glu Tyr Cys Glu Ile Pro Ser Cys
340 345 350

Glu Ser Ser Ala Ser Pro Asp Gln Ser Asp Ser Ser Val Pro Pro Glu
355 360 365

Glu Gln Thr Pro Val Val Gln Glu Cys Tyr Gln Ser Asp Gly Gln Ser
370 375 380

Tyr Arg Gly Thr Ser Ser Thr Thr Ile Thr Gly Lys Lys Cys Gln Ser
385 390 395 400

Trp Ala Ala Met Phe Pro His Arg His Ser Lys Thr Pro Glu Asn Phe
405 410 415

Pro Asp Ala Gly Leu Glu Met Asn Tyr Cys Arg Asn Pro Asp Gly Asp
420 425 430

Lys Gly Pro Trp Cys Tyr Thr Thr Asp Pro Ser Val Arg Trp Glu Tyr
435 440 445

Cys Asn Leu Lys Arg Cys Ser Glu Thr Gly Gly Ser Val Val Glu Leu
450 455 460

Pro Thr Val Ser Gln Glu Pro Ser Gly Pro Ser Asp Ser Glu Thr Asp
465 470 475 480

Cys Met Tyr Gly Asn Gly Lys Asp Tyr Arg Gly Lys Thr Ala Val Thr
485 490 495

Ala Ala Gly Thr Pro Cys Gln Gly Trp Ala Ala Gln Glu Pro His Arg
500 505 510

His Ser Ile Phe Thr Pro Gln Thr Asn Pro Arg Ala Asp Leu Glu Lys
515 520 525

Asn Tyr Cys Arg Asn Pro Asp Gly Asp Val Asn Gly Pro Trp Cys Tyr
530 535 540

Thr Thr Asn Pro Arg Lys Leu Tyr Asp Tyr Cys Asp Ile Pro Leu Cys
545 550 555 560

Ala Ser Ala Ser Ser Phe Glu Cys Gly Lys Pro Gln Val Glu Pro Lys
565 570 575

Lys Cys Pro Gly Arg Val Val Gly Gly Cys Val Ala Asn Pro His Ser
580 585 590

Trp Pro Trp Gln Ile Ser Leu Arg Thr Arg Phe Thr Gly Gln His Phe
595 600 605

Cys Gly Gly Thr Leu Ile Ala Pro Glu Trp Val Leu Thr Ala Ala His
610 615 620

Cys Leu Glu Lys Ser Ser Arg Pro Glu Phe Tyr Lys Val Ile Leu Gly
625 630 635 640

Ala His Glu Glu Tyr Ile Arg Gly Leu Asp Val Gln Glu Ile Ser Val
645 650 655

Ala Lys Leu Ile Leu Glu Pro Asn Asn Arg Asp Ile Ala Leu Leu Lys
660 665 670

Leu Ser Arg Pro Ala Thr Ile Thr Asp Lys Val Ile Pro Ala Cys Leu
675 680 685

Pro Ser Pro Asn Tyr Met Val Ala Asp Arg Thr Ile Cys Tyr Ile Thr
690 695 700

Gly Trp Gly Glu Thr Gln Gly Thr Phe Gly Ala Gly Arg Leu Lys Glu
705 710 715 720

Ala Gln Leu Pro Val Ile Glu Asn Lys Val Cys Asn Arg Val Glu Tyr
725 730 735

Leu Asn Asn Arg Val Lys Ser Thr Glu Leu Cys Ala Gly Gln Leu Ala
740 745 750

Gly Gly Val Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys
755 760 765

Phe Glu Lys Asp Lys Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu
770 775 780

Gly Cys Ala Arg Pro Asn Lys Pro Gly Val Tyr Val Arg Val Ser Arg
785 790 795 800

Phe Val Asp Trp Ile Glu Arg Glu Met Arg Asn Asn
805 810

<210> 13

<211> 790

<212> PRT

<213> Sus scrofa

<400> 13

Asp Ser Leu Asp Asp Tyr Val Asn Thr Gln Gly Ala Phe Leu Phe Ser
1 5 10 15

Leu Ser Arg Lys Gln Val Ala Ala Arg Ser Val Glu Glu Cys Ala Ala
20 25 30

Lys Cys Glu Ala Glu Thr Asn Phe Ile Cys Arg Ala Phe Gln Tyr His
35 40 45

Ser Lys Asp Gln Gln Cys Val Val Met Ala Glu Asn Ser Lys Thr Ser
50 55 60

Pro Ile Ala Arg Met Arg Asp Val Val Leu Phe Glu Lys Arg Ile Tyr
65 70 75 80

Leu Ser Glu Cys Lys Thr Gly Asn Gly Lys Asn Tyr Arg Gly Thr Thr
85 90 95

Ser Lys Thr Lys Ser Gly Val Ile Cys Gln Lys Trp Ser Val Ser Ser
100 105 110

Pro His Ile Pro Lys Tyr Ser Pro Glu Lys Phe Pro Leu Ala Gly Leu
115 120 125

Glu Glu Asn Tyr Cys Arg Asn Pro Asp Asn Asp Glu Lys Gly Pro Trp
130 135 140

Cys Tyr Thr Thr Asp Pro Glu Thr Arg Phe Asp Tyr Cys Asp Ile Pro
145 150 155 160

Glu Cys Glu Asp Glu Cys Met His Cys Ser Gly Glu His Tyr Glu Gly
165 170 175

Lys Ile Ser Lys Thr Met Ser Gly Ile Glu Cys Gln Ser Trp Gly Ser

" p.D.

180 185 190

Gln Ser Pro His Ala His Gly Tyr Leu Pro Ser Lys Phe Pro Asn Lys
195 200 205

Asn Leu Lys Met Asn Tyr Cys Arg Asn Pro Asp Gly Glu Pro Arg Pro
210 215 220

Trp Cys Phe Thr Thr Asp Pro Asn Lys Arg Trp Glu Phe Cys Asp Ile
225 230 235 240

Pro Arg Cys Thr Thr Pro Pro Pro Thr Ser Gly Pro Thr Tyr Gln Cys
245 250 255

Leu Lys Gly Arg Gly Glu Asn Tyr Arg Gly Thr Val Ser Val Thr Ala
260 265 270

Ser Gly His Thr Cys Gln Arg Trp Ser Ala Gln Ser Pro His Lys His
275 280 285

Asn Arg Thr Pro Glu Asn Phe Pro Cys Lys Asn Leu Glu Glu Asn Tyr
290 295 300

Cys Arg Asn Pro Asp Gly Glu Thr Ala Pro Trp Cys Tyr Thr Thr Asp
305 310 315 320

Ser Glu Val Arg Trp Asp Tyr Cys Lys Ile Pro Ser Cys Gly Ser Ser
325 330 335

Thr Thr Ser Thr Glu His Leu Asp Ala Pro Val Pro Pro Glu Gln Thr
340 345 350

Pro Val Ala Gln Asp Cys Tyr Arg Gly Asn Gly Glu Ser Tyr Arg Gly
355 360 365

Thr Ser Ser Thr Thr Ile Thr Gly Arg Lys Cys Gln Ser Trp Val Ser
370 375 380

Met Thr Pro His Arg His Glu Lys Thr Pro Gly Asn Phe Pro Asn Ala
385 390 395 400

Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp Ala Asp Lys Ser Pro
405 410 415

Trp Cys Tyr Thr Thr Asp Pro Arg Val Arg Trp Glu Tyr Cys Asn Leu
420 425 430

Lys Lys Cys Ser Glu Thr Glu Gln Gln Val Thr Asn Phe Pro Ala Ile

435

440

445

Ala Gln Val Pro Ser Val Glu Asp Leu Ser Glu Asp Cys Met Phe Gly
450 455 460

Asn Gly Lys Arg Tyr Arg Gly Lys Arg Ala Thr Thr Val Ala Gly Val
465 470 475 480

Pro Cys Gln Glu Trp Ala Ala Gln Glu Pro His Arg His Ser Ile Phe
485 490 495

Thr Pro Glu Thr Asn Pro Arg Ala Gly Leu Glu Lys Asn Tyr Cys Arg
500 505 510

Asn Pro Asp Gly Asp Asp Asn Gly Pro Trp Cys Tyr Thr Thr Asn Pro
515 520 525

Gln Lys Leu Phe Asp Tyr Cys Asp Val Pro Gln Cys Val Thr Ser Ser
530 535 540

Phe Asp Cys Gly Lys Pro Lys Val Glu Pro Lys Lys Cys Pro Ala Arg
545 550 555 560

Val Val Gly Gly Cys Val Ser Ile Pro His Ser Trp Pro Trp Gln Ile
565 570 575

Ser Leu Arg Tyr Arg Tyr Arg Gly His Phe Cys Gly Gly Thr Leu Ile
580 585 590

Ser Pro Glu Trp Val Leu Thr Ala Lys His Cys Leu Glu Lys Ser Ser
595 600 605

Ser Pro Ser Ser Tyr Lys Val Ile Leu Gly Ala His Glu Glu Tyr His
610 615 620

Leu Gly Glu Gly Val Gln Glu Ile Asp Val Ser Lys Leu Phe Lys Glu
625 630 635 640

Pro Ser Glu Ala Asp Ile Ala Leu Leu Lys Leu Ser Ser Pro Ala Val
645 650 655

Ile Thr Asp Lys Val Ile Pro Ala Cys Leu Pro Thr Pro Asn Tyr Val
660 665 670

Val Ala Asp Arg Thr Ala Cys Tyr Ile Thr Gly Trp Gly Glu Thr Lys
675 680 685

Gly Thr Tyr Gly Ala Gly Leu Leu Lys Glu Ala Arg Leu Pro Val Ile

690

695

700

Glu Asn Lys Val Cys Asn Arg Tyr Glu Tyr Leu Gly Gly Lys Val Ser
705 710 715 720

Pro Asn Glu Leu Cys Ala Gly His Leu Ala Gly Gly Ile Asp Ser Cys
725 730 735

Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Phe Glu Lys Asp Lys Tyr
740 745 750

Ile Leu Gln Gly Val Thr Ser Trp Gly Leu Gly Cys Ala Leu Pro Asn
755 760 765

Lys Pro Gly Val Tyr Val Arg Val Ser Arg Phe Val Thr Trp Ile Glu
770 775 780

Glu Ile Met Arg Arg Asn
785 790

<210> 14

<211> 10

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic,
hypothetical

<400> 14

hawaaugucu

10

<210> 15

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic,
substrate

<400> 15

Ala Ala Pro Val

1

<210> 16
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:synthetic,
substrate

<400> 16
Ala Ala Pro Ala
1

<210> 17
<211> 18
<212> PRT
<213> Homo sapiens

<400> 17
Arg Asn Pro Asp Gly Asp Val Gly Gly Pro Trp Cys Tyr Thr Thr Asn
1 5 10 15
Pro Arg